

REMARKS/ARGUMENTS

Applicant filed a pre-appeal brief and the PTO reopened the case (which has been pending almost six years). To hopefully end this prosecution, Applicant cancels claims 37 and 39.

Issue #1: Has PTO met its §103 burden regarding “confusion matrix”?

Claim 27 states models for lattice search comprise a “phoneme confusion matrix.” The PTO rejects this claim based on Wolf, Chou, and Wegmann “for the same reasons as set forth in combination of claims 21 and 24.” (OA, 8) However, the Office Action provides no reasons related to “confusion matrix” for claim 21 (likely because claim 21 was not pending when the office action was written) or claim 24 (likely because claim 24 does not mention “confusion matrix”). While the rejection for claim 24 includes by reference the rejection for claim 1 (which does include “confusion matrix”), the claim 1 rejection appears to focus on Chau disclosing a “plurality of language models” and does not address “confusion matrix.” (OA, 6) Thus, it is unclear how any of Wolf, Chou, and Wegmann are being asserted to reject this claim. Consequently, the PTO has not met its §103 burden regarding this claim and Applicant requests the PTO specifically address this issue in claim 27 in a non-final office action.<sup>1</sup> For at least these reasons, the answer to Issue #1 is “no” and thus, this claim and any dependent claims are allowable over any combination of the cited art.

Issue #2: Does Chou have “flexible endpoints”?

Claim 1 states that searching a phoneme lattice comprises “modifying the score for the traversed path by...allowing flexible endpoints for phonemes in a path such that at least one of a first arc that ends at a first frame and a second arc that starts at a third frame is extended so that the first arc and the second arc are directly connected at a second frame.” The PTO rejects this based on Chau (14:1-19 and 5:9-22). (OA, 6) Chau (5:9-22) states “head and tail units of the two phone word [] merge directly with the tail and head units of previous and subsequent words, respectively.” This “merge directly” language just means the tail and head are unlike a “body”

<sup>1</sup> Applicant respectfully submits this omission amounts to a failure to articulate a prima facie case of unpatentability and the burden to rebut this “rejection” has not yet shifted to Applicant. Consequently, a next Office action rejecting claim 27 cannot properly be made final since only then would the Applicant be obligated to rebut the rejection, presuming that such an Office action sets forth a prima facie case. (See MPEP § 706.07(a)) (“second or any subsequent actions on the merits shall be final, except where the examiner introduces a new ground of rejection that

portion that must connect with previous or subsequent words indirectly via a head or tail. A non-body portion, like a head or tail, "merges directly" in Chau with a respective tail or head of another word. In short, this portion of Chau says nothing about "flexible endpoints...such that...one of a first arc...and a second arc...is extended so that the first arc and the second arc are directly connected at a second frame." There are no "flexible endpoints." There is no arc that is "extended."

Chau (14:1-19) is no better. It addresses "pruning procedures" but that just means the number of arcs is lessened—not that an arc is extended or, for that matter, extended based on a flexible endpoint. (Chau, 14:16-19: "Through pruning, the number of arcs...is less than...number of distinct phones", *see also* Fig. 5, box 508) In other locations, Chau provides the "left pre-word phone graph...is pruned by imposing a time constraint...The pre-word nodes which do not satisfy this ending time constraint are preferably pruned from the active pre-word list..." (Chau, 11:1-10) Thus, by "pruning" Chau is just reducing the number of possible word options that can possibly connect to the word portion (e.g., a head portion in Chau) at issue—nothing about an arc that is extended or, for that matter, extended based on a flexible endpoint. For at least these reasons, the answer to Issue #2 is "no" and thus, this claim and any dependent claims are allowable over any combination of the cited art.

Claim 15 includes "modifying the score for the traversed path by allowing repetition of phonemes and allowing flexible endpoints for phonemes in a path such that at least one of a first arc that ends at a first frame and a second arc that starts at a third frame is extended such that the first arc and the third arc are directly connected at a second frame." For at least the reasons listed for claim 1, this claim and any dependent claims are allowable over any combination of the cited art.

Claim 24 includes "a lattice parameter identifier to identify lattice vertices and arc parameters based on M-best refined phoneme paths of each frame, wherein at least one of a first arc that ends at a first frame and a second arc that starts at a third frame is extended such that the first arc and the third arc are directly connected at a second frame." For at least the reasons listed for claim 1, this claim and any dependent claims are allowable over any combination of the cited art.

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is neither necessitated by applicant's amendment of the claims nor based on information submitted in an information disclosure...")

Claim 51 includes "modifying the score for the traversed path by allowing repetition of phonemes and allowing flexible endpoints for phonemes in a path such that at least one of a first arc that ends at a first frame and a second arc that starts at a third frame is extended so that the first arc and the second arc are directly connected at a second frame." For at least the reasons listed for claim 1, this claim and any dependent claims are allowable over any combination of the cited art.

Issue #3: §101 Rejections

Applicant thanks the Examiner for her guidance in this regard. Applicant amended claims 1 and 15 to address these rejections. Support for the amendments exists in the originally filed specification as follows:

An embodiment of the present invention is a method and system for phoneme lattice construction for speech processing such as speech recognition and keyword spotting. The present invention may be used for dividing a speech recognition/keyword spotting process into two separate phases. The first phase may be phoneme lattice construction that is vocabulary and task independent. The second phase may be phoneme lattice search that is vocabulary and task dependent. These two phases may be distributed to a client and a server. The client may construct a phoneme lattice for an input speech signal and transfer parameters of the phoneme lattice to the server. The server may search the phoneme lattice to produce a textual representation of the input speech signal if the task is to recognize speech, and/or to determine whether the input speech signal contains targeted keywords if the task is to spot keywords.

Specification, p. 4, lines 15-30).<sup>2</sup> As seen in the above excerpt, the various embodiments of the invention are not business methods or "manipulations simply of public or private legal obligations." *Ex parte Bilski*, Appeal No. 2007-1130, Slip op. at 28 (Fed. Cir. October 30, 2008). Nor can steps in amended claims 1 and 15 "be performed entirely in the human mind." *Id.* at fn. 26. As amended, the claims are, in the least, tied to a particular machine. Regarding

<sup>2</sup> See also, e.g., p. 16, lines 1-19) ("Embodiments of the present invention may be implemented on any computing platform, which comprises hardware and operating systems. Processing required by the embodiments may be performed by a general-purpose computer alone or in connection with a special purpose computer. Such processing may be performed by a single platform or by a distributed processing platform. In addition, such processing and functionality can be implemented in the form of special purpose hardware or in the form of software. If embodiments of the present invention are implemented in software, the software may be stored on a storage media or device (e.g., hard disk drive, floppy disk drive, read only memory (ROM), CD-ROM device, flash memory device, digital versatile disk (DVD), or other storage device) readable by a general or special purpose programmable processing system, for configuring and operating the processing system when the storage media or device is read by the processing system to perform the procedures described herein. Embodiments of the invention may also be considered to be implemented as a machine-readable storage medium, configured for use with a processing system,

claim 15 in particular, the previous version of the claim even addressed the roles of a "client" as compared to a "server" and the presently amended version further addresses "memory" and "processor." As such, the §101 rejection is overcome.

Conclusion

In view of these remarks, the application is now in condition for allowance and the Examiner's prompt action in accordance therewith is respectfully requested. Applicant respectfully submits that the independent claims are allowable over any combination of the cited art. Further, the dependent claims are also allowable for the same reasons as their respective base claims and further due to the additional features that they recite. Separate and individual consideration of the dependent claims is respectfully requested. The Commissioner is authorized to charge any additional fees or credit any overpayment to Deposit Account No. 20-1504.

Respectfully submitted,

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where the storage medium so configured causes the processing system to operate in a specific and predefined manner to perform the functions described herein.)